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INFORMATION FOR THE PUBLIC.

DIPHTHERIA.

CIRCULAR OF THE STATE BOARD OF HEALTH OF CALIFORNIA.

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CIRCULAR ON DIPHTHERIA.

By the statute organizing the State Board of Health, it is made its duty to take "cognizance of the interests of health and life among the citizens generally. They must make sanitary investigations and inquiries respecting the causes of disease, especially epidemics, the source of mortality, and the effects of localities * * * on the public health, and gather such information in respect to these matters as they may deem proper for diffusion among the people."

By virtue of this authority, and in fulfillment of the duty imposed upon it, and in view of the fact of the prevalence of DIPHTHERIA in some localities, the State Board of Health issues this circular.

It is known that erroneous views are entertained by many regarding this fatal and now common disease—its etiology or causation, its contagious or infectious character, its relation to filth and insanitary conditions.

There is no fact in medicine now more generally recognized by sanitarians than that of the contagious and infectious nature of diphtheria. However much observers may differ as to the local or constitutional origin of the disease, the fact of its communicability from the sick to the well, is almost universally admitted by authorities. Yet, in regard of other points in its history—whether necessarily dependent or not upon a specific germ; whether generated by unhealthy and unclean conditions, by sewer gas, by emanations from privies, cesspools, and other deposits of filth undergoing putrefaction—opinions are not so fully accordant. There is

an admitted obscurity as to the true relation of some of these circumstances to the disease.

All are agreed, however, that diphtheria, like other zymotic diseases, is not the necessary lot of humanity; that it is *preventable*; that its ravages are due, in very large measure, to neglect; to the violation, in one way or another, of sanitary laws, and that, though it may not be *generated* by filth, it finds there a soil favorable to its development; that it grows and flourishes there, and that the human system is rendered by it especially sensitive to morbid influences of every kind. A susceptibility to disease, and to the contagious principle by which it is propagated, is thus induced, and hence the liability of its dissemination among the members of a family, or others more remotely and indirectly exposed, is greatly increased. It is better, therefore, to avoid whatever may tend to depress the energies and lower the vital resistance to disease. This, it is certain, filth, uncleanness in and around the dwelling—does.

Though there is much in common among the contagious diseases as to the method of their propagation by contagion, there are differences peculiar to each which it is important to bear in mind.

In smallpox, the special seat of activity of the CONTAGIUM—"its breeding-places," to use a common term—is in the skin and its eruption and the contents of the vesicles, and in the secretions from the mouth and throat; in scarlet fever, in the skin, even to the termination of the desquamative or *peeling* process, and in the secretions; in measles, in the skin, and the discharges from the mouth, nose, and air passages, and probably in the tears; in diphtheria, in the throat, nose, or other seat of the exudation or membranous deposit.

These may be considered the special seats or *vehicles* of contagion, while in all these diseases, with varying degrees of certainty, communication may be established through the breath, the perspiration, the discharges from the mouth and throat, by articles of clothing, or other substances with which the various secretions and exhalations of the body may, either through the atmosphere, or more directly, have come in contact. There is also reason to believe that the con-

tagium of diphtheria is conveyed by the evacuations from the bowels of those sick with the disease, and by *water* or *milk* contaminated therewith. The disease seems also to be capable of being conveyed by means of the domestic animals, as dogs and cats, which have frequented the apartments of the sick.

From a consideration of these general facts pertaining to the causation of diphtheria may be deduced rules for its *hygienic management*, and its *prevention*.

ITS HYGIENIC MANAGEMENT.

The disease having been introduced into a family, the fact of its CONTAGIOUSNESS should be promptly recognized, and suitable precautions taken:

(a) By strict *isolation* of the sick. Shut off all communication with the house, especially by children, and admit to the apartment only those absolutely required as nurses. Though children are very much more liable to the disease than adults, and commonly have it in a more severe form, the latter do have it, and, besides, by visiting the sick, expose themselves to the risk of conveying the contagion to others. Visits of sympathy, therefore, however benevolent and commendable their motives, should be avoided.

(b) Other members of the family—children under fifteen years of age more urgently, for reasons just stated—should be removed, if possible, to a part of the house having no direct communication with the apartment occupied by the sick person. If the latter is in the upper stories of the house, probably the rooms on lower floors may be safely used.

(c) The room occupied by the sick should be large, exposed where practicable to the sunlight, and capable of being well ventilated. It should be remembered in this connection, that by *good ventilation* is understood an *abundance of fresh air without a draught*. All useless furniture—curtains, carpets, and the like—should be removed. A disinfectant solution should be kept in the room in an uncovered vessel, in which infected clothing suitable for washing, soiled shirts, pillow-cases, blankets, etc., should be soaked before removal from the apartment. They should then be boiled. The

same disinfectant solution, being stainless, may be sprinkled over the bedding and carpets, when the latter have not been removed, or it may be occasionally diffused through the room by an ordinary spray instrument, thus reaching and destroying infectious particles in the atmosphere.

A solution recommended for the above purposes may be cheaply made by dissolving eight ounces of sulphate of zinc (white vitriol) and four ounces of common salt in a gallon of water. It is better than carbolic acid and has the additional advantage of being odorless. For convenience the ingredients may be mixed by using *four* tablespoonfuls of the zinc, *two* of salt, and one gallon of water.

(d) All discharges from the bowels and kidneys of the patient should be immediately disinfected by pouring over them, liberally, the disinfectant just mentioned, or by a solution of sulphate of iron (copperas, or green vitriol), made by dissolving about one and one half pounds of the salt in a gallon of water. They should then be removed and, preferably, buried.

The secretions of the nose and throat should be received upon rags, and these burned.

(e) The attendants upon the sick should not communicate nor associate with other members of the family, or with the public, without having first changed their clothes, and washed and disinfected themselves. The zinc solution may be advantageously used for this purpose ; or thymol (a substance obtained from the common thyme and some other plants), prepared by dissolving one half ounce (~~four teaspoonfuls approximately~~) of thymol in two ounces of alcohol, and adding a tablespoonful of this to one half gallon of water. It is believed to be a valuable disinfectant, equal to and less disagreeable than carbolic acid. This solution may also be used as a spray about the room.

(f) Death occurring, the body should be thoroughly washed with the zinc solution, and then wrapped in a sheet wet by soaking in the same. It should then be placed in a tight coffin. The funeral should be private. The body clothes worn by the deceased should be burned, or effectually treated with the zinc solution as above advised.

(g) In case of recovery of the patient, he should still be kept apart from others—especially children—until all his clothing has been completely disinfected with the boiling zinc solution. He should be provided with uninfected clothing, and should not be allowed to attend school, or other assemblages, until in the judgment of a competent medical authority it is safe so to do. The tenacity of the contagious principle in diphtheria is admitted to be very great, and the period of time after recovery from the disease when the danger of its communication to others may be considered past is as yet uncertain. There is good evidence that the disease has been conveyed by infected clothing several weeks, and even months after having been worn.

(h) The room occupied by the sick should, after the recovery of the latter, be vacated and completely disinfected. This is best done by the fumes of sulphur. As already mentioned, articles too valuable to be burned, such as linens, flannels, blankets, etc., may be treated with the boiling zinc solution.

Other heavy articles, as woolen clothing, pillows, furs, and the like, which cannot be boiled, should be suspended and exposed in the room to be disinfected, and, after the completion of this process, hung in the open air. Mattresses and upholstered articles should be ripped open, for better exposure to the fumes of the disinfecting agent. Carpets may be left on the floor, but afterwards taken to the open air and beaten.

In using sulphur, the rooms to be fumigated must be vacated. Place the sulphur in iron pans, supported upon bricks set in a tub containing a little water, and ignite it by the aid of a spoonful or two of alcohol; or place the pan containing the sulphur over hot coals in a basin of hot ashes resting upon bricks. By the adoption of either of these plans danger from fire will be avoided. During fumigation the windows, doors, and all flues and crevices by which the fumes might escape, should be closed, and so remain for twenty-four hours. The rooms may then be opened and ventilated for some hours, the woodwork washed, and the

walls whitened or re-papered. Two pounds of sulphur will be required for a room ten square feet.

Dry heat, at 230° F. or 250° F., where it can be applied, is likewise a valuable disinfectant.

THE PREVENTION OF DIPHTHERIA.

1. Under this clause are included many of the precepts inculcated in the preceding pages, especially such as relate to *cleanliness*. The cardinal principle to be observed, applicable to all zymotic diseases, is *CLEANLINESS*. This term not only applies to the person—to individual freedom from filthiness—but to the surroundings of the dwelling, to accumulations of refuse or decaying animal or vegetable materials in the cellar or about the premises, to the privy, cesspool, drains, and sewer, and to the water supply that it is not contaminated through these sources.

See that the house drains are properly laid, trapped, and ventilated, and disconnected, by ventilation, from the sewer, that disinfectants are properly used therein, and that there is no leakage therefrom. For such disinfecting purposes the solution of copperas is the best and cheapest—five pounds to a bucketful of water.

2. Look to the cellar, that it is dry and clean, containing no filthy water, concealed filthy wells, or cesspools—no heaps of decaying vegetables.

3. Whenever shallow wells are used for drinking water, their surroundings should be perfectly clean; they should be protected against the slop-water and other filthy liquids thrown in the vicinity; and they should be at a *safe* distance from uncemented privies and cesspools.

The precise definition of the word “safe,” in this connection, is, perhaps, somewhat indefinite. Much will depend upon the geological character of the soil, and the topography. It is considered that the distance from the well to the cesspool should not, under ordinary circumstances, be less than one hundred feet.

In some of our valley towns, not easily drained, in which leaky privy-vaults and cesspools have been used since their early settlement—never emptied, but covered over when full

and others dug near by—the soil must be saturated, and well water, under any circumstances, unsafe.

4. Avoid the sources of contagion. When diphtheria occurs in a family, other children connected therewith should be withdrawn from school until danger of infection is past. There is probably more danger of the communication of diphtheria in the school-room than is the case with any other disease, from the fact that it often occurs in so mild a form as to be unrecognized; yet from the mildest case the most malignant may result.

5. Sore throat, when occurring in a child, particularly during the prevalence of diphtheria, should be looked upon with suspicion, the more so when there is fever and bad breath. The disease has often been conveyed by such an one by kissing, or by drinking from the same cup. As scarlet fever may occur without the *rash*, so may there be diphtheria without the characteristic membrane upon the throat.

6. Avoid the *ordinary* causes of disease—imprudence in living, exposure, unsuitable or insufficient clothing, and whatever can tend to lower the vital resistance to epidemic influence. Sound health is one of the best preservatives against infectious diseases.

By the State Board of Health.

F. W. HATCH, M. D.,
Permanent Secretary.

SACRAMENTO, CAL., May 29, 1883.

THIS CIRCULAR IS ONE OF A SERIES INTENDED TO CONVEY
USEFUL INFORMATION TO THE PUBLIC UPON PREVENTABLE
DISEASES. KEEP IT FOR REFERENCE.

